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ABSTRACT

This publication presents information on wheat. Wheat was originally a wild grass and not native to the United States. Wheat was not planted there until 1777 (and then only as a hobby crop). Wheat is grown on more acres than any other grain in this country. Soft wheats are grown east of the Mississippi River, and hard wheats are grown west of the Mississippi. Foods made from wheat belong to the bread, cereal, rice, and pasta food group at the base of the Food Guide Pyramid. Americans need to eat 6-11 servings of these foods per day. Wheat foods provide complex carbohydrates for energy, B-vitamins, fiber, protein, and iron, as well as fiber, minerals, and vitamins. They tend to be low in fat. This publication includes: a list of wheat vocabulary words; a map of wheat growing states; a list of common wheat foods; a description of the life of the wheat kernel; a drawing of the wheat kernel; an explanation of why wheat is a healthy food; a description of the food guide pyramid and how wheat foods fit into it; a personal Food Guide Planner; and a pyramid word search. (SM)

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ED 439 118

WHEAT

The Whole Story

OKLAHOMA STATE DEPARTMENT OF EDUCATION

Sandy Garrett
State Superintendent of Public Instruction

February 1998

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Wheat

History

When and where wheat was first discovered is not exactly known. Like all cereal grains, it was originally a wild grass. The grass wheat came from einkorn. Evidence exists that it first grew in Mesopotamia and in the Tigris and Euphrates River Valleys in the Middle East. As early as 6700 B.C., Swiss lake dwellers used wheat in flat cakes. It was also mentioned by the Chinese.

Wheat was actually cultivated after millet, oats, rice, and barley. However, when the Egyptians discovered how to make yeast-leavened breads between 2000 and 3000 B.C., wheat quickly became the favored grain.

Wheat is not native to the United States and was not even grown by the colonists. It did not do well in the New England soil and climate and was in little demand. Not until 1777 was wheat even planted in the United States, and then only as a hobby crop. Today, the United States exports more than half of its wheat and is one of the world's four largest exporters.

Geography

Wheat is grown on more acres than any other grain. Forty-two states produce the six different classes of wheat grown in the United States. Soft red winter and soft white wheats are grown east of the Mississippi River. Soft wheat is lower in protein and is best used for cereals, crackers, cookies, pastries, cakes, biscuits, flat breads, and Oriental noodles.

West of the Mississippi, the Plains states and the Pacific Northwest grow the most wheat. Hard red winter, hard red spring, durum, hard white and soft white wheats are grown. Hard wheats are higher in protein and are best used for breads, bagels, buns, pizza, bulgur, and cereal products. Durum wheat is used to make semolina for pasta and couscous. Soft white wheat grown in the Pacific Northwest is especially good for Oriental noodles and flat breads such as pita.

Nutrition

More foods are made with wheat than any other cereal grain. Foods made from wheat belong to the bread, cereal, rice, and pasta food group at the base of the Food Guide Pyramid. Americans need to eat 6 to 11 servings of a variety of these foods every day.

Wheat foods provide complex carbohydrates (starch) for energy, B-vitamins, fiber, protein, and iron. Whole-wheat and wheat-bran foods also provide additional amounts of fiber, minerals, and vitamins. Wheat foods are generally low in fat, except for some sweet or fried foods. Oil, dressings, margarine, and butter add fat to these foods.

Wheat Vocabulary Words

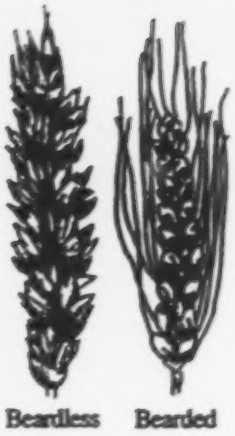
Acre: an English and U.S. measure of land (640 acres equal one square mile)
Bran: the outer layers of a kernel of grain below the chaff or husk
Bulgur: whole wheat that has been partially cooked, dried, and then cracked
Couscous: steamed semolina; a traditional North African dish of steamed semolina served with meat and vegetables
Farina: steamed particles milled from the endosperm of hard wheat (Hot, cooked cereal is made from farina.)
Endosperm: the starchy part of a grain kernel that flour, farina, and semolina come from
Export: to trade or sell and convey a product or commodity from one country to another
Germ: the small part of a grain kernel that forms the sprout when planted
Gluten: an elastic protein that is formed by mixing wheat flour and water

Hearth: the stone floor of a fireplace where bread used to be and is sometimes still baked (Hearth bread is usually a heavier, denser bread that is cooked at slower temperatures for longer periods of time than soft-crumb bread.)

Leavened: yeast, baking soda, baking powder, or other substance mixed into a dough or batter that produces gas to make the dough expand or rise

Semolina: coarse particles milled from the endosperm of durum wheat (Pasta is made from durum semolina.)

Soft-crumb: describes breads that are lighter in texture and density than hearth breads



These states produce 77 percent of the wheat harvested in the U.S.:

#1- Kansas
North Dakota
Montana
Oklahoma
Washington
South Dakota
Texas
Idaho
Colorado
Nebraska
and
Minnesota (tie)

Wheat Foods We Enjoy

- Muffins
- Hot cereal (rolled wheat, creamed wheat, farina)
- Cold cereal (shredded wheat, flakes, puffed wheat)
- Cookies, cakes, pastries
- Wheat bran (cereal, breads, muffins)
- Oriental steam breads
- Wheat flour
- Wheat flour tortillas
- Crackers, snacks
- English muffins
- Pasta
- Bagels
- Chapatis
- Couscous
- Bread, rolls, buns
- Bulgur
- Pancakes, waffles
- Oriental noodles
- Pretzels
- Pizza crust
- Biscuits
- Pita

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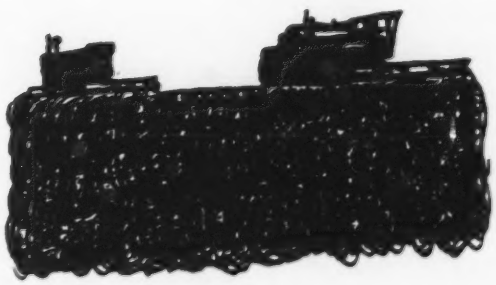
THE LIFE OF THE WHEAT KERNEL

It takes a lot of hard work to produce wheat. First, the soil is prepared for planting. A tractor is used to pull a plow over the field to turn the soil and kill the weeds. The soil is then broken into smaller pieces by pulling a disk harrow over the field.

When the soil is ready in the fall, the wheat seeds are planted with a machine called a grain drill. The moisture in the soil is what makes the wheat plant start growing. At first, the germ (the growing part of the wheat seed) gets its food from the endosperm. As the wheat plant grows bigger, it gets food from the soil through its roots and also makes food in its green leaves. The wheat plant will grow to be about six inches tall before the first frost comes. Then it stops growing for the winter. When spring comes, the warm, moist days make the wheat plants grow quickly. They grow to be as tall as seven feet, but they usually grow two to four feet tall.

When the wheat is almost ripe, usually in May, the farmers race with the weather to harvest the crop. A ripe wheat field can be ruined in five minutes by heavy rains, strong winds, hail, or fire started by lightning, destroying thousands of acres.



A WHEAT KERNEL . . . UP CLOSE!!

Wheat is Good for You!

If the bran and the germ are ground together with the endosperm, that makes whole-wheat flour. The bran is also used in cereals and for livestock and poultry feed.

The germ sometimes is added to baked goods and casseroles. Wheat germ is rich in vitamin B and has lots of vitamin E. Those vitamins are important. They help people grow and stay healthy.

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THE FOOD GUIDE PYRAMID

The Food Guide Pyramid is an excellent guide for healthful eating. It begins with plenty of breads, cereals, pasta, crackers, and other grain foods. Then it builds a balanced diet by adding the vegetable, fruit, milk, and meat groups.

No one food group is more important than another—for good health, you need all. But go easy on fats, oils, and sweets—the foods at the tip of the pyramid.

# Eaten	One serving equals:
☐	1 slice soft-crumb bread (1 oz)
☐	½ English muffin, regular bagel, or soft pretzel
☐	½ bun or pita (1 ounce)
☐	½ slice firm hearth loaf
☐	½ ounce crackers, cookies, or pretzels
☐	½ medium muffin
☐	1 small waffle, 3½-in square
☐	1 pancake, 4-in diameter
☐	½ cup cooked rice, bulgur, barley, or other whole grain
☐	½ cup cooked pasta or couscous
☐	1 ounce cold cereal (amount varies; read labels)
☐	½ cup cooked cereal (½ cup uncooked)
☐	2 cups plain popped popcorn
☐	1 slice pizza (⅛ of 10-in pizza)
☐	½ - 1 wheat or corn tortilla (1 ounce)
☐	**Total servings eaten.**

- **How many servings do you need?**
  (Guidelines apply to ages two and older)

	Sedentary Women, Older Adults	Children, Teenage Girls, Active Women, Sedentary Men	Teenage Boys, Active Men, Very Active Women
Grains	6	9	11
Vegetables	3	4	5
Fruit	2	3	4
Milk	2-3	2-3	2-3
Meat (oz)	5	6	7
Fat (g)	53	73	93

- **What counts as a serving?**

Breads, Cereals, Rice, Pasta
(See checklist opposite side.)

Vegetables
- 1 cup raw leafy vegetables
- ½ cup cooked or chopped vegetables
- ¾ cup juice

Fruit
- 1 medium apple, banana, orange
- ½ cup chopped, cooked, canned
- ¾ cup juice

Milk, Yogurt, Cheese
- 1 cup milk or yogurt
- 1½ oz natural cheese
- 2 oz processed cheese

Meat, Poultry, Fish, Dry Beans, Eggs, Nuts
- 2-3 oz lean meat, poultry, or fish
- ½ cup cooked dry beans, one egg, or two tablespoons peanut butter count as one ounce lean meat

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PERSONAL FOOD GUIDE PLANNER

Log your daily food intake here. At the end of the day, see how it compares with the pyramid. Complete this exercise daily until following the Food Guide Pyramid becomes second nature.

Bread, cereal, rice, and pasta group (6-11 servings)

Breakfast _____

_____

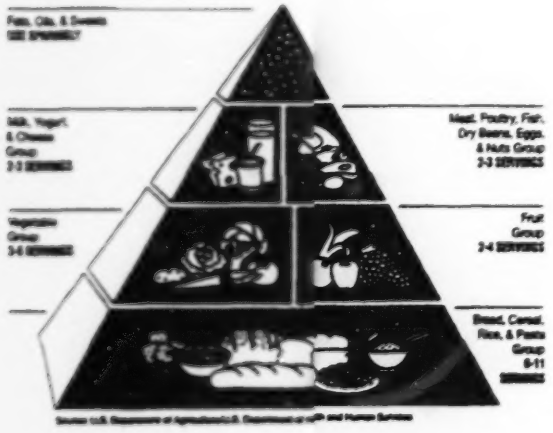
Lunch _____

_____

Dinner _____

_____

Snacks _____



Fruit group (2-4 servings)

Breakfast _____

_____

Lunch _____

_____

Dinner _____

_____

Snacks _____

Vegetable group (3-5 servings)

Breakfast _____

_____

Lunch _____

_____

Dinner _____

_____

Snacks _____

Milk, yogurt, and cheese group (2-3 servings)

Breakfast _____

_____

Lunch _____

_____

Dinner _____

_____

Snacks _____

Meat, poultry, fish, dry beans, eggs, and nuts group (2-4 servings)

Breakfast _____

_____

Lunch _____

_____

Dinner _____

_____

Snacks _____

Fats, oils, and sweets (use sparingly)

Breakfast _____

_____

Lunch _____

_____

Dinner _____

_____

Snacks _____

Pyramid Word Search

Circle the words you find from the list below. They are arranged across, down and diagonally.

```
                W
              A Z H
            I B B Y E
          W T D A X C A
        G E T V K L F U T
      R E H E S E E A C G T
    I Q R J H P R Z O A N K L
  E N F M K G O Z T Q L A B E L
C U Y W T F A I D E G O C X D F S
P B A G E L Q P T V R W R N A S E U A
L K U J I N F B S R Y P P I T A W I Q G E
R O L L A M I L L E R X K N E P S V K D R M T
F C T D G F H E R V S A J S T R O N G O F I B H H
A Z P M O U K C T G D A Y B E L E V A T O R C R I S N
R D H I B N R Y E O B J N K A R Q X F P S C V U E Y E Z I
M T N C S K U L T M R N O D P R V A W Y O M K J L A G F N D C
E V Y G R A I N S Z I P F G W H L I D N F G H N O T D P Z W S N C
R S I X V K H G F B H A L P H I A E N R I C H E D Q U Y E L G R O F D
L Z D T E W F S T Z C F E R L D C H Y G B D F H A K U R W D A O X F S L E
G R A M A V K E R N E L S O L G A H E M S Q R A N L Z U E O I C A T S A P B L
A F Y D G M A C A R O N I K T U W L J Z T V S L E M T S T N E I R T U N K D E M A
D H G F A R I N A Q P L H G F D R O Y S A C F E T X D H K B T V S E Q F L E S T R I S
A K B R L O P N X I F E R M E N T A T I O N D G U H R M Y A S O B C G M H O P D B Z M Y A
E F P D O U G H S K L A F M N O I T I R T U N I L A C E R E A L S M W K F I B E R S T R O N G
N L J F Z W C A R B O H Y D R A T E D Y K X V Y G R E N E B E H J D R G V B A Z Y M K E L E V E N
K V R I C E Y N M L H F C R L S K C O R R E I B H S W I L F Y Z D K G M I N E R A L S R O T I N I M E
Z B F H D Q D M A F L O U R X Y C P L A H J F W N O T K J C R A C K E R S U K D Y L G W P F H N I F F U M
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WORDS

acre	agriculture	bagel	baker	barley	bierrock	bulgur	bun	bushel	bran
bread	carbohydrate	calorie	cereals	cookie	corn	cracker	dough	elevator	eleven
endosperm	energy	enriched	ethnic	farina	farmer	fermentation	fiber	flour	germ
gluten	grains	gram	grow	healthy	kernels	knead	label	lasagne	macaroni
miller	minerals	nutrients	nutrition	oats	pasta	pita	pizza	pretzel	protein
mill	muffin	rice	rise	roll	rotini	rye	sandwich	six	servings
spaghetti	strong	tortilla	vitamins	wheat	yeast				